

R309-220. Monitoring and Water Quality: Public Notification Requirements. (September 13, 2005)

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R309-220. Monitoring and Water Quality: Public Notification Requirements.

R309-220-1. Purpose.

The purpose of this rule is to outline the public notification requirements for public water systems.

R309-220-2. Authority.

This rule is promulgated by the Drinking Water Board as authorized by Title 19, Environmental Quality Code, Chapter 4, Safe Drinking Water Act, Subsection 104 of the Utah Code and in accordance with 63-46a of the same, known as the Administrative Rulemaking Act.

R309-220-3. Definitions.

Definitions for certain terms used in this rule are given in R309-110 but may be further clarified herein.

R309-220-4. General Public Notification Requirements.

(1) Violation Categories and Other Situations Requiring a Public Notice:

Each owner or operator of a public water system (community water systems, non-transient non-community water systems, and transient non-community water systems) must give notice for all violations of these rules and for other situations, as listed below. The term "UPDWR violations" is used in this subpart to include violations of the maximum contaminant level (MCL), maximum residual disinfection level (MRDL), treatment technique (TT), monitoring requirements, and testing procedures contained in R309-100 through R309-215.

(a) UPDWR Violations:

- (i) Failure to comply with an applicable maximum contaminant level (MCL) or maximum residual disinfectant level (MRDL).**
- (ii) Failure to comply with a prescribed treatment technique (TT).**

- (iii) Failure to perform water quality monitoring, as required by the drinking water regulations.

- (iv) Failure to comply with testing procedures as prescribed by a drinking water regulation.

- (b) Variance and Exemptions Under R309-10 and R309-11.

- (i) Operation under a variance or an exemption.

- (ii) Failure to comply with the requirements of any schedule that has been set under a variance or exemption.

- (c) Special Public Notices

- (i) Occurrence of a waterborne disease outbreak or other waterborne emergency.

- (ii) Exceedance of the nitrate MCL by non-community water systems (NCWS), where granted permission by the Executive Secretary under R309-200-5(1)(c), Table 200-1, note (4)(b).

- (iii) Exceedance of the secondary maximum contaminant level (SMCL) for fluoride.

- (iv) Availability of unregulated contaminant monitoring data.

- (v) Other violations and situations determined by the Executive Secretary to require a public notice under this subpart.

(2) Definition of Public Notice Tiers:

Public notice requirements are divided into three tiers, to take into account the seriousness of the violation or situation and of any potential adverse health effects that may be involved. The public notice requirements for each violation or situation listed in paragraph (1) of this section are determined by the tier to which it is assigned. Each tier is defined below:

- (a) Tier 1 public notice -- required for UPDWR violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.

- (b) Tier 2 public notice -- required for all other UPDWR violations and situations with potential to have serious adverse effects on human health.

(c) Tier 3 public notice -- required for all other UPDWR violations and situations not included in Tier 1 and Tier 2.

(3) Required Distribution of Notice

(a) Each public water system must provide public notice to persons served by the water system, in accordance with this rule. Public water systems that sell or otherwise provide drinking water to other public water systems (i.e., to consecutive systems) are required to give public notice to the owner or operator of the consecutive system; the consecutive system is responsible for providing public notice to the persons it serves.

(b) If a public water system has a violation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the Executive Secretary may allow the system to limit distribution of the public notice to only persons served by that portion of the system which is out of compliance. Permission by the Executive Secretary for limiting distribution of the notice must be granted in writing.

(c) A copy of the notice must also be sent to the Executive Secretary, in accordance with the requirements under R309-105-16.

R309-220-5. Tier 1 Public Notice -- Form, Manner and Frequency of Notice.

(1) Violation Categories and Other Situations Requiring a Tier 1 Public Notice:

(a) Violation of the MCL for total coliforms when fecal coliform or *E. coli* are present in the water distribution system (as specified in R309-200-5(6)(b)), or when the water system fails to test for fecal coliforms or *E. coli* when any repeat sample tests positive for coliform (as specified in R309-205-5(5));

(b) Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, as defined in R309-200-5(1)(c), Table 200-1, or when the water system fails to take a confirmation sample within 24 hours of the system's receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, as specified in R309-205-5(1)(e)(ii);

(c) Exceedance of the nitrate MCL by non-community water systems, where permitted to exceed the MCL by the Executive Secretary under R309-200-5(1)(c), Table 200-1, note (4)(b), as required under R309-220-12;

- (d) Violation of the MRDL for chlorine dioxide, as defined in 40 CFR section 141.65(a), when one or more samples taken in the distribution system the day following an exceedance of the MRDL at the entrance of the distribution system exceed the MRDL, or when the water system does not take the required samples in the distribution system, as specified in 40 CFR section 141.133(c)(2)(i);
- (e) Violation of the turbidity MCL under R309-200-5(5)(a), where the Executive Secretary determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;
- (f) Violation of the Surface Water Treatment Rule (SWTR) or Interim Enhanced Surface Water Treatment rule (IESWTR) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit, where the Executive Secretary determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;
- (g) Occurrence of a waterborne disease outbreak, as defined in R309-110, or other waterborne emergency (such as a failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination);
- (h) Other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the Executive Secretary either in its rules or on a case-by-case basis.

(2) Frequency of the Tier 1 Public Notice and Additional Steps Required:

Public water systems must:

- (a) Provide a public notice as soon as practical but no later than 24 hours after the system learns of the violation;
- (b) Initiate consultation with the Executive Secretary as soon as practical, but no later than 24 hours after the public water system learns of the violation or situation, to determine additional public notice requirements; and
- (c) Comply with any additional public notification requirements (including any repeat notices or direction on the duration of the posted notices) that are established as a result of the consultation with the Executive Secretary. Such

requirements may include the timing, form, manner, frequency, and content of repeat notices (if any) and other actions designed to reach all persons served.

(3) Form and Manner of the Public Notice:

Public water systems must provide the notice within 24 hours in a form and manner reasonably calculated to reach all persons served. The form and manner used by the public water system are to fit the specific situation, but must be designed to reach residential, transient, and non-transient users of the water system. In order to reach all persons served, water systems are to use, at a minimum, one or more of the following forms of delivery:

- (a) Appropriate broadcast media (such as radio and television);
- (b) Posting of the notice in conspicuous locations throughout the area served by the water system;
- (c) Hand delivery of the notice to persons served by the water system; or
- (d) Another delivery method approved in writing by the Executive Secretary.

R309-220-6. Tier 2 Public Notice -- Form, Manner and Frequency of Notice.

(1) Violation Categories And Other Situations Requiring a Tier 2 Public Notice:

- (a) All violations of the MCL, MRDL, and treatment technique requirements, except where a Tier 1 notice is required under R309-220-5(1) or where the Executive Secretary determines that a Tier 1 notice is required;
- (b) Violations of the monitoring and testing procedure requirements, where the Executive Secretary determines that a Tier 2 rather than a Tier 3 public notice is required, taking into account potential health impacts and persistence of the violation; and
- (c) Failure to comply with the terms and conditions of any variance or exemption in place.

(2) Frequency of the Tier 2 Public Notice:

(a) Public water systems must provide the public notice as soon as practical, but no later than 30 days after the system learns of the violation. If the public notice is posted, the notice must remain in place for as long as the violation or situation persists, but in no case for less than seven days, even if the violation or situation is resolved. The Executive Secretary may, in appropriate circumstances, allow additional time for the initial notice of up to three months from the date the system learns of the violation. It is not appropriate for the Executive Secretary to grant an extension to the 30-day deadline for any unresolved violation or to allow across-the-board extensions by rule or policy for other violations or situations requiring a Tier 2 public notice. Extensions granted by the Executive Secretary must be in writing.

(b) The public water system must repeat the notice every three months as long as the violation or situation persists, unless the Executive Secretary determines that appropriate circumstances warrant a different repeat notice frequency. In no circumstance may the repeat notice be given less frequently than once per year. It is not appropriate for the Executive Secretary to allow less frequent repeat notice for an MCL violation under the Total Coliform Rule or a treatment technique violation under the Surface Water Treatment Rule, Interim Enhanced Surface Water Treatment Rule or Filter Backwash Recycling Rule. It is also not appropriate for the Executive Secretary to allow through its rules or policies across-the-board reductions in the repeat notice frequency for other ongoing violations requiring a Tier 2 repeat notice. Executive Secretary determinations allowing repeat notices to be given less frequently than once every three months must be in writing.

(c) For the turbidity violations specified in this paragraph, public water systems must consult with the Executive Secretary as soon as practical but no later than 24 hours after the public water system learns of the violation, to determine whether a Tier 1 public notice under R309-220-5(1) is required to protect public health. When consultation does not take place within the 24-hour period, the water system must distribute a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation), following the requirements under R309-220-5(2) and (3). Consultation with the Executive Secretary is required for:

- (i) Violation of the turbidity MCL under R309-200-5(5)(a); or
- (ii) Violation of the SWTR or IESWTR treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.

(3) Form and Manner of the Public Notice:

Public water systems must provide the initial public notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:

(a) Unless directed otherwise by the Executive Secretary in writing, community water systems must provide notice by:

(i) Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

(ii) Any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in paragraph (3)(a)(i) of this section. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places served by the system or on the Internet; or delivery to community organizations.

(b) Unless directed otherwise by the Executive Secretary in writing, non-community water systems must provide notice by:

(i) Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and

(ii) Any other method reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice required in paragraph (3)(b)(i) of this section. Such persons may include those served who may not see a posted notice because the posted notice is not in a location they routinely pass by. Other methods may include: publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers).

R309-220-7. Tier 3 Public Notice -- Form, Manner and Frequency of Notice.

(1) Violation Categories And Other Situations Requiring a Tier 3 Public Notice:

- (a) Monitoring violations under R309-205, R309-210 and R309-215, except where a Tier 1 notice is required under R309-220-5(1) or where the Executive Secretary determines that a Tier 2 notice is required;
- (b) Failure to comply with a testing procedure established in R309-205, R309-210 and R309-215, except where a Tier 1 notice is required under R309-220-5(1) or where the Executive Secretary determines that a Tier 2 notice is required;
- (c) Operation under a variance granted under R309-100-10;
- (d) Availability of unregulated contaminant monitoring results, as required under R309-220-10; and
- (e) Exceedance of the fluoride secondary maximum contaminant level (SMCL), as required under R309-220-11.

(2) Frequency of the Tier 2 Public Notice:

- (a) Public water systems must provide the public notice not later than one year after the public water system learns of the violation or situation or begins operating under a variance or exemption. Following the initial notice, the public water system must repeat the notice annually for as long as the violation, variance, exemption, or other situation persists. If the public notice is posted, the notice must remain in place for as long as the violation, variance, exemption, or other situation persists, but in no case less than seven days (even if the violation or situation is resolved).
- (b) Instead of individual Tier 3 public notices, a public water system may use an annual report detailing all violations and situations that occurred during the previous twelve months, as long as the timing requirements of paragraph (2)(a) of this section are met.

(3) Form and Manner of the Public Notice:

Public water systems must provide the initial notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it must at a minimum meet the following requirements:

- (a) Unless directed otherwise by the Executive Secretary in writing, community water systems must provide notice by:

(i) Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

(ii) Any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in paragraph (3)(a)(i) of this section. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places or on the Internet; or delivery to community organizations.

(b) Unless directed otherwise by the Executive Secretary in writing, non-community water systems must provide notice by:

(i) Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and

(ii) Any other method reasonably calculated to reach other persons served by the system, if they would not normally be reached by the notice required in paragraph (3)(b)(i) of this section. Such persons may include those who may not see a posted notice because the notice is not in a location they routinely pass by. Other methods may include: publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers).

(4) Use of the Consumer Confidence Report to meet the Tier 3 public notice requirements:

For community water systems, the Consumer Confidence Report (CCR) required under R309-225 may be used as a vehicle for the initial Tier 3 public notice and all required repeat notices, as long as:

(a) The CCR is provided to persons served no later than 12 months after the system learns of the violation or situation as required under R309-220-7(2);

(b) The Tier 3 notice contained in the CCR follows the content requirements under R309-220-8; and

- (c) The CCR is distributed following the delivery requirements under R309-220-7(3).

R309-220-8. Content of the Public Notice.

(1) When a public water system violates a UPDWR or has a situation requiring public notification, each public notice must include the following elements:

- (a) A description of the violation or situation, including the contaminant(s) of concern, and (as applicable) the contaminant level(s);
- (b) When the violation or situation occurred;
- (c) Any potential adverse health effects from the violation or situation, including the standard language under paragraph (4)(a) or (4)(b) of this section, whichever is applicable;
- (d) The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water;
- (e) Whether alternative water supplies should be used;
- (f) What actions consumers should take, including when they should seek medical help, if known;
- (g) What the system is doing to correct the violation or situation;
- (h) When the water system expects to return to compliance or resolve the situation;
- (i) The name, business address, and phone number of the water system owner, operator, or designee of the public water system as a source of additional information concerning the notice; and
- (j) A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under paragraph (4)(c) of this section, where applicable.

(2) Required elements to be included in the public notice for public water systems operating under a variance or exemption:

(a) If a public water system has been granted a variance or an exemption, the public notice must contain:

- (i) An explanation of the reasons for the variance or exemption;
- (ii) The date on which the variance or exemption was issued;
- (iii) A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and
- (iv) A notice of any opportunity for public input in the review of the variance or exemption.

(b) If a public water system violates the conditions of a variance or exemption, the public notice must contain the ten elements listed in paragraph (1) of this section.

(3) Presentation of the public notice.

(a) Each public notice required by this section:

- (i) Must be displayed in a conspicuous way when printed or posted;
- (ii) Must not contain overly technical language or very small print;
- (iii) Must not be formatted in a way that defeats the purpose of the notice;
- (iv) Must not contain language which nullifies the purpose of the notice.

(b) Each public notice required by this section must comply with multilingual requirements, as follows:

- (i) For public water systems serving a large proportion of non-English speaking consumers, as determined by the Executive Secretary, the public notice must contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the notice or to request assistance in the appropriate language.
- (ii) In cases where the Executive Secretary has not determined what constitutes a large proportion of non-English speaking consumers, the public water system must include in the public notice the same information as in paragraph (3)(b)(i) of this section, where appropriate to

reach a large proportion of non-English speaking persons served by the water system.

(4) Public water systems are required to include the following standard language in their public notice:

(a) Standard health effects language for MCL or MRDL violations, treatment technique violations, and violations of the condition of a variance or exemption. Public water systems must include in each public notice the health effects language specified in R309-220-14 corresponding to each MCL, MRDL, and treatment technique violation and for each violation of a condition of a variance or exemption.

(b) Standard language for monitoring and testing procedure violations.

Public water systems must include the following language in their notice, including the language necessary to fill in the blanks, for all monitoring and testing procedure violations: "We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During (compliance period), we ('did not monitor or test' or 'did not complete all monitoring or testing') for (contaminant(s)), and therefore cannot be sure of the quality of your drinking water during that time."

(c) Standard language to encourage the distribution of the public notice to all persons served. Public water systems must include in their notice the following language (where applicable): "Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail."

R309-220-9. Notice to New Billing Units or New Customers.

(1) Community water systems must give a copy of the most recent public notice for any continuing violation, the existence of a variance or exemption, or other ongoing situations requiring a public notice to all new billing units or new customers prior to or at the time service begins.

(2) Non-community water systems must continuously post the public notice in conspicuous locations in order to inform new consumers of any continuing violation, variance or exemption, or other situation requiring a public notice for as long as the violation, variance, exemption, or other situation persists.

R309-220-10. Special Notice of the Availability of Unregulated Contaminant Monitoring Results.

- (1) Applicability of the special notice: The owner or operator of a community water system or non-transient, non-community water system required to monitor under 40 CFR section 141.40 must notify persons served by the system of the availability of the results of such sampling no later than 12 months after the monitoring results are known.
- (2) Required form and manner of the special notice: The form and manner of the public notice must follow the requirements for a Tier 3 public notice prescribed in R309-220-7(3), (4)(a), and (4)(c). The notice must also identify a person and provide the telephone number to contact for information on the monitoring results.

R309-220-11. Special Notice for Exceedance of the Secondary MCL for Fluoride.

- (1) Applicability of the special notice: Community water systems that exceed the fluoride secondary maximum contaminant level (SMCL) of 2 mg/l as specified in R309-200-6 (determined by the last single sample taken in accordance with R309-205-5), but do not exceed the maximum contaminant level (MCL) of 4 mg/l for fluoride (as specified in R309-200-5), must provide the public notice in paragraph (3) of this section to persons served. Public notice must be provided as soon as practical but no later than 12 months from the day the water system learns of the exceedance. A copy of the notice must also be sent to all new billing units and new customers at the time service begins and to the State public health officer. The public water system must repeat the notice at least annually for as long as the SMCL is exceeded. If the public notice is posted, the notice must remain in place for as long as the SMCL is exceeded, but in no case less than seven days (even if the exceedance is eliminated). On a case-by-case basis, the Executive Secretary may require an initial notice sooner than 12 months and repeat notices more frequently than annually.
- (2) Required form and manner of the special notice: The form and manner of the public notice (including repeat notices) must follow the requirements for a Tier 3 public notice in R309-220-7(3), (4)(a), and (4)(c).
- (3) Required mandatory language to be contained in the special notice: The notice must contain the following language, including the language necessary to fill in the blanks:

This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than 2 milligrams per liter (mg/l) of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by your community water system (name) has a fluoride concentration of (insert value) mg/l.

Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine should be provided with alternative sources of drinking water or water that has been treated to remove the fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride-containing products. Older children and adults may safely drink the water.

Drinking water containing more than 4 mg/l of fluoride (the U.S. Environmental Protection Agency's drinking water standard) can increase your risk of developing bone disease. Your drinking water does not contain more than 4 mg/l of fluoride, but we're required to notify you when we discover that the fluoride levels in your drinking water exceed 2 mg/l because of this cosmetic dental problem.

For more information, please call (name of water system contact) of (name of community water system) at (phone number). Some home water treatment units are also available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call NSF International at 1-877-8-NSF-HELP.

R309-220-12. Special Notice for Nitrate Exceedances above MCL by Non-Community Water Wystems (NCWS), where Granted Permission by the Executive Secretary.

(1) Applicability of the special notice: The owner or operator of a non-community water system granted permission by the Executive Secretary under R309-200-5(1)(c), Table 200-1, note (4)(b) to exceed the nitrate MCL must provide notice to persons served according to the requirements for a Tier 1 notice under R309-220-5 (1) and (2).

(2) Required form and manner of the special notice: Non-community water systems granted permission by the Executive Secretary to exceed the nitrate MCL under R309-200-5(1)(c), Table 200-1, note (4)(b) must provide continuous posting of the fact that nitrate levels exceed 10 mg/l and the potential health effects of exposure, according to the requirements for Tier 1 notice delivery under R309-220-5(3) and the content requirements under R309-220-8.

R309-220-13. Notice by Executive Secretary on behalf of the Public Water System.

(1) The Executive Secretary may give the notice required by this rule on behalf of the owner and operator of the public water system if the Executive Secretary complies with the requirements of this rule.

- (2) The owner or operator of the public water system remains responsible for ensuring that the requirements of this rule are met.

R309-220-14. Standard Health Effects Language.

Microbiological Contaminants:

- (1) Total Coliform. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
- (2) Fecal coliform/E.Coli. Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
- (3) Total organic carbon. Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
- (4) Turbidity. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR) and Filter Backwash Recycling Rule (FBRR) violations.

- (5) Giardia lamblia. Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
- (6) Viruses. Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

(7) Heterotrophic plate count (HPC) bacteria. Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

(8) Legionella. Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

(9) Cryptosporidium. Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Radioactive Contaminants:

(10) Alpha emitters. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.

(11) Beta/photon emitters. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.

(12) Combined Radium 226/228. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

(13) Uranium. Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.

Inorganic Contaminants:

(14) Antimony. Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

(15) Arsenic. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

(16) Asbestos. Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

(17) Barium. Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

(18) Beryllium. Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.

(19) Cadmium. Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

(20) Chromium. Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

(21) Copper. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

(22) Cyanide. Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.

(23) Fluoride. Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.

(24) Lead. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

(25) Mercury (inorganic). Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(26) Nitrate. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(27) Nitrite. Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(28) Selenium. Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

(29) Thallium. Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.

Synthetic organic contaminants including pesticides and herbicides:

(30) 2,4-D. Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.

(31) 2,4,5-TP (Silvex). Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.

(32) Acrylamide. Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.

(33) Alachlor. Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.

(34) Atrazine. Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.

(35) Benzo(a)pyrene (PAH). Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.

(36) Carbofuran. Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.

(37) Chlordane. Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.

(38) Dalapon. Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.

(39) Di (2-ethylhexyl) adipate. Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties.

(40) Di (2-ethylhexyl) phthalate. Some people who drink water containing di (2-ethylhexyl) phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.

(41) Dibromochloropropane (DBCP). Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.

(42) Dinoseb. Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.

(43) Dioxin (2,3,7,8-TCDD). Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.

(44) Diquat. Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.

(45) Endothall. Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.

(46) Endrin. Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.

(47) Epichlorohydrin. Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.

(48) Ethylene dibromide. Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.

(49) Glyphosate. Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.

(50) Heptachlor. Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.

(51) Heptachlor epoxide. Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.

(52) Hexachlorobenzene. Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.

(53) Hexachlorocyclopentadiene. Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.

(54) Lindane. Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.

(55) Methoxychlor. Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.

(56) Oxamyl (Vydate). Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.

(57) PCBs (Polychlorinated biphenyls). Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.

(58) Pentachlorophenol. Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.

(59) Picloram. Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.

(60) Simazine. Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.

(61) Toxaphene. Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.

Volatile Organic Contaminants:

(62) Benzene. Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.

(63) Bromate. Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.

(64) Carbon Tetrachloride. Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.

(65) Chloramines. Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.

(66) Chlorine. Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.

(67) Chlorite. Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.

(68) Chlorine dioxide. Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.

(69) Chlorobenzene. Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.

(70) o-Dichlorobenzene. Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.

(71) p-Dichlorobenzene. Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.

(72) 1,2-Dichloroethane. Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.

(73) 1,1-Dichloroethylene. Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.

(74) cis-1,2-Dichloroethylene. Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.

(75) trans-1,2-Dichloroethylene. Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.

(76) Dichloromethane. Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.

(77) 1,2-Dichloropropane. Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.

(78) Ethylbenzene. Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.

(79) Haloacetic Acids (HAA). Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

(80) Styrene. Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.

(81) Tetrachloroethylene. Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.

(82) 1,2,4-Trichlorobenzene. Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.

(83) 1,1,1-Trichloroethane. Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.

(84) 1,1,2-Trichloroethane. Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.

(85) Trichloroethylene. Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.

(86) TTHMs (Total Trihalomethanes). Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

(87) Toluene. Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.

(88) Vinyl Chloride. Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.

(89) Xylenes. Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

KEY: drinking water, public notification, health effects

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